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## LXVIII.—On some new Opiliones from Japan and the Loo-Choo Islands. By S. HIRST.

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THE Japanese harvest-men which are described in this note form part of a series of Arachnida collected by Mr. S. Akiyama. Two of the species belong to the suborder Laniatores, which was not hitherto known to occur in Japan. One of these two species is referable to the genus *Sitalces*, E. Sim., a genus which was founded in 1879 for two species occurring on the island of Réunion, and contains also three East-African species recently described by Dr. W. Sörensen, and another (*S. gardineri*, Hirst) from the Seychelles. I take this opportunity to describe an Indian species (*S. indicus*, sp. n.) from Travancore. It is necessary to create a new genus (*Heterobiantes*) for the other species of this suborder, obtained by Mr. Akiyama. Two other species belonging to this new genus were already present in the British Museum collection (*H. geniculatus*, Poc., from Hong Kong, which was described by Mr. Pocock under the name *Epedanus*, and *H. insulanus*, sp. n., from Great Loo-Choo Island). A species of the genus *Systemocentrus*, E. Sim. (Opiliones palpatores), was also represented in Mr. Akiyama's collection. The genus *Systemocentrus* is new to Japan, but is already known to occur in Siam (*S. quinquedentatus*, E. Sim.) and Burma (*S. galeatus*, Thor.), and an Indian species (*Syleus niger*, C. L. Koch) also probably belongs to this genus. A Chinese species (*S. confucianus*, sp. n.) is described below.

*Systemocentrus japonicus*, sp. n.

*Dorsal surface* of body presenting the appearance of being closely and uniformly granular throughout (see the remarks at the end of this description). A median process, which is well marked although not very large, is present a little behind the anterior margin of the cephalothorax, and a pair of much smaller projections are situated on the margin immediately in front of this process. Ocular tubercle moderately high and about as wide as long; its posterior surface is rounded, but the anterior surface, when viewed in profile from the side, seems almost straight; a conical protuberance, which points in a forward and upward direction, is placed on the front half of its dorsal surface. Spines of dorsal surface five in number and about equal in length.

*Ventral surface*.—A slight crest of granules is present on both sides of the first and fourth coxæ, and on the anterior side of the second and third.

*Chelicera* smooth and shining above, but its proximal segment has a well-marked tooth near the base below.

*Palp*.—Femur moderately stout and slightly swollen on the inner side at the distal end. Patella stout, on the inner side at the apex it is produced into a stout short process. Tibia also stout and rather short, but longer than the patella. Tarsus long and slender, the distal end a little stouter, however, than the proximal; it is about equal in length to the patella + the tibia.

*Legs* fairly long (see measurements); their femora, patellæ, and tibiæ are furnished with very minute granules, but the metatarsi (except their proximal end) and the tarsi are quite smooth.

*Measurements in mm.*—Total length 3·75; length of first leg (from base of femur) 8·75, of second 20·25, of third 9, of fourth 14.

*Colour* of body black; posterior spines (sometimes all the spines) of the dorsal surface paler at the apex. Chelicera deep black. Palp brownish, but its tarsus is sometimes blackish. Coxæ of legs slightly darkened, the trochanters pale, the remaining segments of the legs usually rather dark, but the femur is sometimes very slightly lighter in colour than the distal segments (in one specimen the legs are light brown, only the tarsi being distinctly darkened); the tibia of the second leg is not white at the apex as in *S. galeatus*, Thor., but unicolorous.

*Material*.—Four specimens, collected by Mr. S. Akiyama at Fakoné, Japan, during the month of June, 1910.

*Remarks*.—At first I thought that the dorsal surface of this species was closely granular, but whilst examining a specimen (under electric light condensed by a bull's-eye condenser) I noticed that the heat of the artificial light had turned many of the granules white. On rubbing the surface softly with a blunt instrument many of them became detached and disclosed the fact that it was minutely punctured beneath. The granules of this species seem to consist of secreted matter.

This new species has the chelicerae smooth and black, as in *S. quinquedentatus*, E. Sim., but seems to differ (judging from Simon's description) from that species in the structure of the ocular tubercle and in the presence of a median projection just in front of the anterior margin of the cephalothorax. The ocular tubercle resembles somewhat that of *S. galeatus*, Thor., but the tibia of the second leg lacks the

white apical band which Thorell states to be present in that species.

*Note.*—The specimens on which the description of this new species is based probably are immature, and I think that *S. galeatus*, Thor., is also described from an immature specimen; both seem to be quite distinct species, however.

*Systemocentrus confucianus*, sp. n.

*Dorsal surface* of body very finely granular; in addition to the very minute granules, several indistinct transverse rows of obsolete but rather larger granules are also present, and on the abdominal part of the dorsal surface one of these rows is usually placed in a line with each of the large central spines; the middle of the front of the cephalothoracic area is rather high, and is furnished with a group of conical tubercles (very similar to those which are present in the same position in some of the species of the genus *Egenus*). Ocular tubercle low; although obsolete, the median groove can still be distinguished, but it is very shallow and indistinct; on either side of it a few very minute granules are present. Close to the posterior margin of the dorsal surface and in a line with the five large spines a conical granule is present.

*Palp* resembling that of *S. japonicus*, sp. n., rather closely in structure, but the patella without any process.

*Legs.*—Several distinct denticles are present at the apex of the upper surface of the femora and patellæ, and a denticle is present on either side at the apex of the tibiæ; femora sparsely furnished with obsolete granules and short hairs, and the distal segments with numerous fine short hairs.

[No mention is made in this description of the armature of the basal segments of the limbs.]

Total length 6 mm.

*Colour.*—Body black; proximal segments of the legs (including the femora and patellæ) blackish, their tibiæ brownish; metatarsi and tarsi paler brown. Chelicera blackish. Palp with all the segments dark except the tarsus, which is rather light brown, but slightly darkened at the tip.

*Material.*—A single dry specimen from Taipaishan, Shensi Province, China; presented by the Hon. Walter Rothschild.

Genus SITALCES.

In *S. akiyamæ*, sp. n., and *S. indicus*, sp. n., the palp is armed with fairly strong spines of the usual Epedanid type, and Dr. W. Sörensen's figures of *S. typus*, W. S., *S. horridus*, W. S., and *S. mordax*, W. S., show that the spines borne by

the palpi of those species are similar in nature. The spines of the palp of *S. gardineri* are shorter and the basal portion of nearly all of them is short.

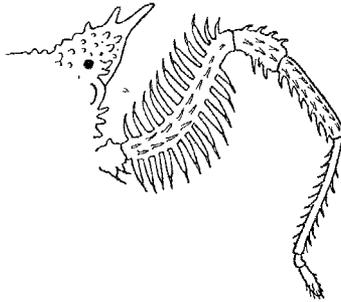
As in other genera of the family Epedanidæ, the number of tarsal segments is variable in this genus and seems to be only of specific importance.

*Sitalces akiyamæ*, sp. n.

*Body* very slightly longer than the metatarsus of the fourth leg and much longer than the tibia of the second or fourth.

*Scutum* without any conspicuous processes (except those on the anterior margin and the ocular tubercle and its processes); the greater part of its surface is covered with granules, each bearing a short stout hair, but anteriorly at the sides a considerable area is smooth and without granules; below this smooth area and close to the margin a group of rather coarse granules is present; on the anterior margin (on either side of the ocular tubercle) three conical processes occur; just behind the ocular tubercle there is a pair of slightly enlarged granules, and in the middle of the last segment (posterior margin) of the scutum a rather large granule is present (a similar granule being present in the middle of the first two of the free abdominal segments). Ocular tubercle with the characteristic processes only moderately developed (fig. 1).

Fig. 1.



*Sitalces akiyamæ*, sp. n. Lateral view of ocular tubercle and first leg.

*Chelicera* with the two proximal segments about equal in length. First (proximal) segment armed with a longitudinal series of processes on each side below; on the outer side these processes are five in number (not counting two small

ones at the base), and they are rather long and blunt, the middle ones being truncate at the end, the others bluntly pointed; processes of the inner side four in number, they are much shorter than those on the outer side, and all of them are bluntly pointed. Second segment of the chelicera with four fairly long processes (or teeth) arranged in a longitudinal row near the inner side of its dorsal surface, and in the middle of it there is a row of 6-8 granules running parallel with the inner row of processes. Fingers armed with minute teeth only.

*Palp* armed with long spines. Its femur has an apical spine on the inner side above, a row of three spines near the proximal end below, and another much smaller spine close to the distal end. *Patella* with two spines on the inner and one on the outer side. *Tibia* with three spines on each side, but those of the proximal pair are smaller than the others (on one palp the inner spine of the proximal pair is missing, but doubtless this is an individual abnormality). *Tarsus* with two spines on each side.

*Legs* comparatively short. Trochanter of *first leg* with a conical tubercle above and two below. Dorsal and ventral spines of femur numerous, stout, and placed close together; in the upper row there are 12-13 of them and in the lower 11. *Patella* fairly long; dorsally it has a number of tubercles and also of fairly long processes towards the inner side; two or three tubercles are present on its lower surface. *Tibia* longer than *patella*; it has an inner row of nine processes and an outer row of conical granules, much smaller in size than the processes of the inner side. *Metatarsus* with only minute granules (in the series on each side), but each granule carries a stiff pointed hair or seta, much resembling that which is carried by the processes of the proximal segments of the limb, only weaker. *Tibia* of *second leg* slightly longer than its *metatarsus* and than the *tibia* of the fourth. Number of tarsal segments 3, 4, 5, 5. [My figures of the first leg of this species and of *S. indicus* show only two tarsal joints, but there are really three. In the figure of *S. akiyamæ* the short hairs on the sides of the segments of the first leg are drawn too large. They must not be mistaken for spines.]

Length of body 4 mm.

*Colour*.—Dorsal surface deep, almost blackish brown; the scutum with some paler brown markings; ventral surface paler than the dorsal surface. Chelicera and palp somewhat darkened; legs deep brown except for the tarsi, which are pale.

*Material*.—A single male example, collected by Mr. S. Akiyama at Idzu, Japan (June 1910).

*Remarks*.—Apparently rather closely allied to the East-African species described (under the generic name *Palpipes*) by Dr. W. Sørensen, but it can be readily distinguished from them by the number of the tarsal segments of the anterior legs and by the armature of the scutum &c.

In the three species that I have been able to examine (the two new species described in this paper and *S. gardineri*, Hirst) the segments of the posterior tarsi are five in number; Dr. Sørensen states in his description of the three East-African species that the tarsi of the posterior legs are divided into four segments, but perhaps he has overlooked one of the segments.

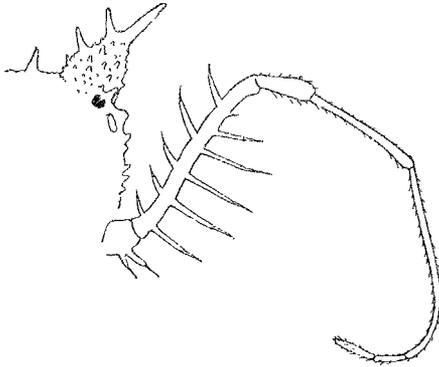
*Sitalces indicus*, sp. n.

*Body* about as long as the tibia of the fourth leg and very much shorter than the tibia of the second.

*Scutum* bearing a number of processes and enlarged granules, which are arranged in transverse rows, a row being situated a little in front of the posterior margin of the cephalothoracic area and also one on each of the abdominal segments (the limits of which are difficult to make out). The central processes, which are paired, are mostly of large size; those of the central pair of the fourth abdominal segment are the longest of all; next in size come those of the middle pair of the cephalothoracic row, but they are much shorter than those of the fourth abdominal; shorter still are those of the first, second, and third abdominal segments; in the third segment the process which is situated on the outer side of those of the middle pair is equal to them in size or even longer. A number of tooth-like projections are placed along the anterior margin of the scutum (on each side of the ocular tubercle) and one is present on the arch-like structure which joins the ocular tubercle. The coarse granules which bear hairs are not very numerous in this species, a large proportion of them being situated in the transverse rows; in the middle of the scutum between the larger processes they are entirely absent, but a few scattered microscopic granules are present there and on other parts of the scutum. *Ocular tubercle* high, conical, and very much more erect than that of *S. akiyamæ*, sp. n.; the three principal processes are very well-developed, the two anterior ones being very long, especially the anteriormost; besides these three processes a number of granules are present, not only on

the posterior surface and sides, but also in front; several of those on the sides are somewhat enlarged and tooth-like, perhaps the most conspicuous being the one which is placed above the eye. (Fig. 2.)

Fig. 2.



*Sitaelces indicus*, sp. n. Lateral view of ocular tubercle and first leg.

*Chelicera*.—A minute denticle is present dorsally on the inner side of the proximal segment at a little distance from its apex, and a few very minute granules also occur at the sides below.

Second segment slightly longer and much stouter than the proximal one. Two processes (or teeth) are present on the inner side of its dorsal surface near the proximal end, the more distal of the two being much the larger; another denticle is situated at a little distance to the outer side of these two processes; several granules bearing fine hairs occur near the base of the immovable finger; a fine line, composed of microscopic granules, runs from the larger process of the dorsal surface to the base of the immovable finger; near the base on the inner side below a curiously shaped projection is present, and in the middle of the (ventral) surface a pair of dentiform processes (or teeth) are present, one on each side of the segment.

Proximal tooth of the row (of four) on the edge of the immovable finger larger than the others; besides these teeth on the edge a denticle is present on the inner side. A very large tooth is present on the edge of the movable finger at an equal distance between its proximal end and the three

teeth at the distal end; of the latter the proximal one is slightly the largest.

*Palp* armed with long spines. Trochanter with a granule on the dorsal surface and with a conical granule at each end and a process in the middle below. Femur with the usual apical spine on the inner side of the dorsal surface and also with a short rounded tubercle near the proximal end; ventrally it has a row of three spines near the proximal end and another spine near the apical end, the latter is not short (as it is in *S. japonicus*), but almost as well developed as the ones near the proximal end. Patella with two inner and one outer spine. Tibia with three and tarsus with two spines on each side.

*Legs* much longer than those of *S. japonicus*.

Trochanter of *first leg* armed below with a spine and a conical tubercle. Its femur has fewer spines than that of *S. japonicus* &c., and they are longer, more slender, and separated from one another by greater intervals than is the case in that species; both on the dorsal and ventral surface these spines are five in number. Patella, tibia, and tarsus without either distinct granules or processes, only short hairs being present on these segments; patella short, but the tibia long and slender, its length being considerably more than twice that of the patella (fig. 2).

Tibia of *second leg* only very slightly shorter than its metatarsus and much longer than the tibia of the fourth.

Number of *tarsal segments* 3, 7, 5, 5.

*Measurements in mm.*—Total length 3·25; length of first leg about 7·4, of second 2, of third 11, of fourth 15.

[*Colour.*—The unique specimen has been preserved in alcohol for a good many years and seems rather bleached; I think it would be useless therefore to attempt to describe the coloration.]

*Material.*—A single specimen captured at Ponmudi (2500 feet), Travancore, by Mr. H. Ferguson during the year 1899.

*Remarks.*—Easily recognizable by the structure of its first leg &c.

#### PSEUDOBIANTES, gen. nov.

Allied to *Epedanus*, Thorell, which it resembles in the shape of the ocular tubercle &c., but differing from that genus in having the patella of the palp unarmed. Tibia and tarsus of palp usually much stouter than the other segments,

and the tarsus strongly bent downwards, so that its spines work against the tibia.

The structure of the palp in this new genus is very similar to that of the Opiliones of the family Hiu-zuanidæ (=Biantidæ). In *P. japonicus*, sp. n., the femur of the palp is quite unarmed except for a conical granule placed near the base below, and thus resembles completely that of the Hiu-zuanidæ. In *P. geniculatus*, Poc., and *P. insulanus*, sp. n., there may be only a row of granules on the ventral surface of the palp or a row of quite well-developed processes may be present; these processes do not bear spines, but only fine hairs.

Type species, *P. japonicus*, sp. n.

*Pseudobiantes japonicus*, sp. n.

*Scutum*.—A pair of sharply pointed processes, which are well marked although not very long, are present in the middle of the second of the four divisions into which the abdominal part of the scutum is divided; and a pair of minute obsolete granules, placed further apart from one another than the processes of the second division, occur on the third. Obsolete granules may also be present on the last segment of the scutum and on the lateral margins; except for the pair of processes and the inconspicuous granules mentioned, the surface is quite smooth. *Ventral surface*: coxa of first leg furnished with a number of granules.

*Chelicera*.—Second segment with a number of granules on its dorsal surface, the one which is placed nearest to the apex being the largest.

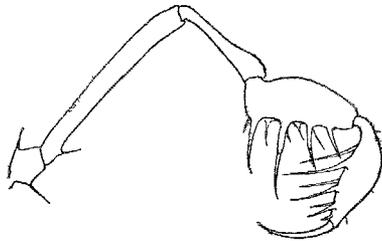
♂. Chelicera of the male a little more swollen than that of the female, especially its second segment. A small tooth is situated at the proximal end of the immovable finger, and it is followed by a large tooth, and then comes a row of four teeth, the proximal one of them being fairly large, the others minute. A fair-sized tooth is present near the proximal end of the movable finger, and it is separated from the row of teeth at the distal end by a slight gap; the latter are four in number, two being large and two small.

♀. In the female sex the edge of the immovable finger of the chelicera is armed with minute teeth only. Movable finger with a row of three teeth near the distal end, the proximal one being the largest.

*Palp*.—A sharp conical granule, which bears a hair, is present on the dorsal surface of the trochanter and another

similar granule on its ventral surface. Femur only with a conical setiferous granule, which is situated near the proximal end below. Patella quite smooth and without either granules or processes. Tibia and tarsus strongly armed. Tibia with three spines on its inner side, the first and second being long, but the apical one shorter; on the outer side it has four spines, the second one from the proximal end being the longest and the first one next in size; several much smaller spines are placed in the middle of the ventral surface. Tarsus with four spines on each side, but those of the apical pair are very small, especially the one on the outer side, which is practically obsolete. (Fig. 3.)

Fig. 3.

*Pseudobiantes japonicus*, sp. n. External view of palp.

*Legs*.—Number of tarsal segments 8, 17–19, 7, 8.

*Measurements in mm*.—Total length 3·5; length of palp (from base of femur) about 6, of first leg 9·5, of second 14·75, of third 11, of fourth 14·75.

*Colour*.—Ground-colour whitish. Cephalothoracic area of scutum marked with a broad median fuscous band and also with a dark marginal line on each side; abdominal segments of the scutum (with the exception of the last one) dark at the sides but pale in the middle; the two anterior free segments are also darkened at the sides, but the last has only a dark spot in the middle. Anal operculum wholly dark; the rest of the ventral surface whitish. Proximal segment of chelicera and the base of the second segment slightly darkened dorsally. Femur and patella of palp slightly darkened at each end; the tibia and tarsus rather deeply infuscate (dark grey) and contrasting rather strongly with the other segments of the appendage. The principal markings of the legs are as follows:—Femora somewhat darkened at the distal end; patellæ usually entirely greyish above; tibiæ at least with a

distinct dark ring near the apex, but often more extensively darkened; the apex of the metatarsi and the tarsal segments are usually slightly darkened also.

*Material*.—A male and female, collected by Mr. S. Akiyama at Idzu, Japan.

*Pseudobiantes insulanus*, sp. n.

♂. *Scutum* unarmed; a few indistinct and obsolete granules only are present on the posterior segments of the scutum and a number of obsolete granules along the lateral margins. *Ventral surface*: coxæ of first leg with a number of granules as in *P. japonicus*, sp. n.

*Chelicera*.—Second segment considerably swollen; near the inner side of its dorsal surface it is furnished with three granules arranged in a longitudinal series, two of them being minute, but the apical one large and conical. A row of four teeth is present on the edge of the immovable finger; the first two teeth (counting from the proximal end) are rather large, the two remaining ones minute. Close to its proximal end the edge of the movable finger is armed with a fairly large tooth, which is separated by a considerable gap from the four teeth of the distal half; the latter resemble those of the immovable finger, the first two of them being fairly large and the other two small.

*Palp*.—Trochanter armed above with a conical process and with two others below. A row of granules is present on the upper surface of the femur and a row of six well-marked processes on its ventral surface; a dentiform granule is situated on the inner side below. Tibia and tarsus strongly armed; the number and relative size of the spines being exactly the same as in *P. japonicus*.

*Legs*.—Number of tarsal segments 9, 20, 7, 8.

*Measurements in mm.*—Total length 3.75; length of first leg (from base of femur) 11.75, of second 19, of third 15, of fourth 19.75.

[*Colour*.—Owing to the length of time that this specimen has been preserved in spirit the markings have practically disappeared, and so I have not described the coloration.]

♀. In the same tube as the male example described above there is another specimen which I identify with doubt as the female of the same species. It is much darker in colour than the male specimen, and differs also in the following details of structure:—

*Chelicera*.—Second segment not swollen, and none of the four granules of the row on its dorsal surface are of large

size. First (proximal) tooth of the row of five teeth which is present on the edge of the immovable finger a little larger than the others, which are very minute. Movable finger without any distinct tooth at its proximal end, only a slight low lobation being present there; distally it is armed with a row of four teeth, the first one of them alone being of large size.

*Palp.*—A conical granule is present on the dorsal surface of the trochanter and two minute granules below. Femur with only one or two microscopic granules on its dorsal surface; near the proximal end of its ventral surface there is a short process, and a longitudinal series of minute granules is also present below.

*Legs.*—Number of tarsal segments 5, 19, ?, 9.

*Measurements in mm.*—Total length 4·5; length of first leg 10·25, of second 17·25, of third ?, of fourth 17·5.

*Note.*—The differences in the structure of the chelicera are certainly due to sex, and the presence of a row of minute granules instead of processes on the ventral surface of the femur of the palp of this specimen is probably only an individual variation, for in *P. geniculatus*, Poc., this segment of the palp may be armed below with distinct processes or only with granules. Nor do I attribute any importance to the difference in colour between these two specimens, for they have been preserved a long time in alcohol, and the male is much bleached.

*Material.*—A male example (the type) collected by Mr. Holst in the forest near Motobu, Great Loo-Choo Island, and a female example (from the same locality) which is perhaps referable to the same species.

#### *Key to the Species of the Genus Pseudobiantes.*

- a. Second abdominal division of scutum armed with a pair of small but distinct thorns; femur of palp without any row of processes below . . . . . *P. japonicus*, sp. n.
- b. Scutum unarmed; femur of palp with a row of granules or processes below.
  - a'. Four distinct spines on outer side of tibia of palp (they must not be confused with the small spines in the middle of the lower surface); narrowed proximal portion of patella of palp long . . . . . *P. insulanus*, sp. n.
  - b'. Only three distinct spines on outer side of tibia of palp, the distal one being either very minute or absent; narrowed portion of patella short . . . . . *P. gemculatus*, Poc.